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Communication Behavior Of County Extension Agents

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SUMMARY

A county Extension agent plays a key role in the communication of new technology from agricultural scientists to farm people. The purpose of the present study was to determine (1) how communication takes place from scientists to county Extension agents; and (2) how county Extension agents then pass these new practices along to the farm people in their county.

Data for the present study were secured in personal interviews with a random sample of 44 of the 88 county Extension agents in Ohio in 1957. The major findings are:

1. Most important sources of information about new farm practices for county Extension agents are Extension specialists, Agricultural Experiment Station bulletins, and farm magazines.

2. County Extension agents are definitely not faced with any shortage of information about new farm technology. Rather, their problem is one of selecting adequate sources of information which may be used in the minimum of time they have available.

3. Agents reported reading an average of almost eight farm magazines and seven professional publications. However, many of these publications were only "scan read." Few county Extension agents read any scientific journals.

4. Agents reported an average of 2.5 trips per year to the Agricultural Experiment Station. In addition, they journeyed to an average of four meetings outside of their county each year to secure technical agricultural information.

5. County Extension agent's sources of information were categorized on the basis of stage in the adoption process. Farm magazines, Extension specialists, and commercial companies were most important in making agents aware of ten different new farm practices. Experiments, research results and Extension specialists were most important in convincing agents they should recommend the new practices to the farmers in their county.

6. All agents were neither aware of, nor did they recommend new practices at the same point in time.

7. Agents required a number of years after they were aware of a new practice before they would recommend it. For example, this "adoption period" averaged 2.07 years for agents recommending Stilbestrol and 2.38 years for agents recommending bulk tanks.

8. Those county Extension agents who are relatively early (compared to other agents) in recommending new practices move rapidly to recommend new practices once they are aware of them. They do not become aware of the practices at an earlier date than the average agent.

9. The most important methods of disseminating information about 10 new farm practices were: newspaper articles, meetings, and personal contacts with farmers.

10. County Extension agents' suggestions for improvement for their communication behavior centered around one main concern. They feel that sometimes they are not in the direct line of communication from agricultural scientists to farm people.

COMMUNICATION BEHAVIOR OF COUNTY EXTENSION AGENTS[1]

Everett M. Rogers and M. Dwayne Yost[2]

THE AGRICULTURAL COMMUNICATION PROCESS

There is terrific interest today in methods of speeding the acceptance of scientific findings by American citizens. This is especially true in the case of new agricultural research findings.

A wide gap exists between the level of research findings available to farmers and the actual adoption and use of this technology. Little agricultural research is performed by farmers themselves. Most of the development of new farm practices is done by agricultural scientists at agricultural experiment stations, the U.S.D.A., and commercial concerns.

The flow of these new research findings from agricultural scientists to farmers is called the communication process. Little direct contact between scientists and farmers takes place. Farm magazines, word-of-mouth discussion among farmers, radio and TV farm programs, and government agencies actively attempt to communicate technological information from agricultural research workers to farm people.

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[1]The data reported in this bulletin were gathered under Ohio Agricultural Experiment Station Project, Hatch 166, entitled: The Communication Process and the Adoption of Farm and Home Practices in Ohio.

[2]Assistant Professor of Rural Sociology at the Ohio State University and Ohio Agricultural Experiment Station; and Research Assistant, Ohio Agricultural Experiment Station; respectively.

Findings reported in a previous publication by Rogers and Capener[3] indicate the relative importance of county agricultural Extension agents as one of these channels of communication. Fifty-six per cent of a state-wide sample of 104 Ohio farm operators perceived the county Extension agent as their best means of contact with agricultural scientists. Another six per cent said they would go "through the Extension Service" which might also mean they would contact their county Extension agent.

This same sample of 104 commercial farmers in Ohio was asked, "What is the most important source from which you obtain information about new practices in farming?"[4] Thirteen per cent mentioned their county Extension agent or Extension Service meetings and another six per cent of the respondents mentioned Extension or Experiment Station bulletins which were probably obtained through their county Extension agent.

A TWO-STEP FLOW OF COMMUNICATION

These findings emphasize the importance of the county Extension agent as an intervening communication channel from the agricultural scientist to the farmer. Farmers realize that their county Extension agent is their link or contact with the agricultural research worker.

Figure 1 depicts the crude communication "model" that was hypothesized to guide the present study. Technological information about new

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[3]Everett M. Rogers and Harold R. Capener, The Agricultural Extension Agent and His Constituents, Ohio Agricultural Experiment Station Research Bulletin, (in press).

[4]Detailed responses to this question are presented by Everett M. Rogers and Dwayne Yost, "How New Farming Ideas Are Communicated," Ohio Farm and Home Research, March-April, 1958.

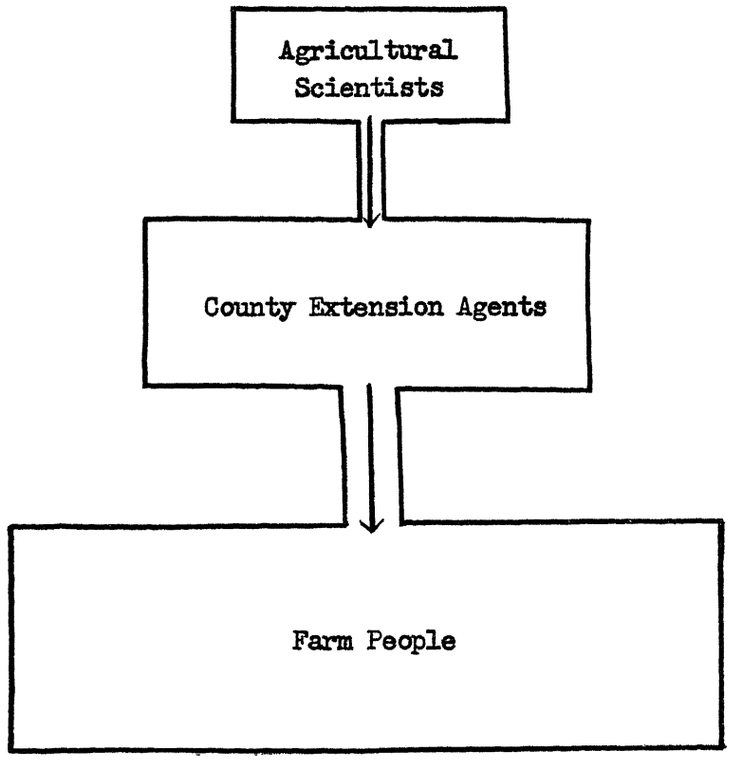

Figure 1. The Two-Step Flow of Technological Communication in Agriculture

research findings flows from the agricultural scientists to the county Extension agents and from them to the farm people. This "two-step flow of communication" is similar to one suggested by sociologists in other communication situations.[5]

This simple communication model raises an important question, "Where and how do county Extension agents secure their information?" Many studies have been completed in which farmers were asked where they obtained farm information. However, the overall efficiency of the communication process may be more easily improved by determining how scientists communicate with county Extension agents.

A review of the literature disclosed no studies in which the communication behavior of county Extension agents had been investigated.

PURPOSE

The purpose of the present study is to determine (1) how communication takes place from agricultural scientists to county Extension agents, and (2) how these county Extension agents then pass this technological information along to their constituents or the people living in their county.

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[5]The two-step flow of communication was originally proposed by Paul F. Lazarsfeld, Bernard Berelson, and Hazel Gaudet, The People's Choice, N. Y., Columbia University Press, 1948, p. 151. A recent review of research findings relevant to the two-step flow hypothesis may be found in Elihu Katz, "The Two-Step Flow of Communication: An Up-To-Date Report on an Hypothesis," Public Opinion Quarterly 21: 61-78 1957.

The long-range goal of communication research in agriculture is to improve and speed up the communication process by which research findings flow from scientists to farm people.

METHODOLOGY

A random sample of 44 of the 88 county agricultural Extension agents in Ohio was interviewed in 1957. The questions that were included on the interview schedule were developed through consultation with other research workers in Rural Sociology, Extension Service specialists and administrators, and county Extension agents. The questions were pretested by personal interviews with five county Extension agents who were not included in the final sample.

All but three county Extension agents were contacted by personal interview at the time of the 1957 Ohio Agricultural Extension Service Annual Conference. Interviewers were staff members and graduate students in Rural Sociology. Respondents were asked to attend the Conference a half day early so that the interviews could be completed. The three county Extension agents who could not be contacted at the Annual Conference were mailed a copy of the interview schedule with instructions on how to answer the questions. All 44 of the county Extension agents selected for the sample co-operated in the study.

GENERAL SOURCES OF INFORMATION

County Extension agents need accurate and timely sources of information about new farm technology. The first purpose of the present study was to determine how communication takes place from agricultural scientists to county Extension agents.

Most Important Sources of Information

In keeping with this purpose, the first two questions on the schedule were an attempt to determine the most important sources of information for county Extension agents. They were: (1) "What are the most important sources from which you obtain information about new farm practices?" and (2) "Which one of these is the most important?"

Table 1 shows these different sources of information which county Extension agents (1) consider to be most important, and (2) consider to be their most important single source. Figure 2 shows the one single source which they consider most important.

Several sources of information were mentioned as important by almost all of the county Extension agents. For example, Extension specialists were named as an important source of information by 37 of the 44 agents in the sample. Thrity-five of the county Extension agents mentioned Experiment Station bulletins and 31 named farm magazines.

In contrast, farm operators utilize quite different sources of information about new farm technology. A state-wide sample of 104 Ohio farmers were asked exactly the same question in 1957 as to their sources of information. The farmers' three most important sources were farm magazines, neighbors and friends, and county Extension agents. Farm magazines were listed as the most important single source of information by 48 per cent of the farmers.

The contrast between the information sources utilized by (1) farmers and (2) county Extension agents lends some evidence as to the validity of the two-step flow of communication hypothesized earlier. The county Extension agents' soureces are (1) more direct to agricultural

TABLE 1 - Sources of Information for County Extension Agents

Source of Information	Most Important Sources*		Most Important Single Source	
	Number	Per Cent	Number	Per Cent
Extension Specialists	37	20	17	39
Experiment Station Bulletin	35	19	12	27
Farm Magazines	31	17	6	14
Direct Contact With Experiment Station	18	9	4	9
Key Farmers	16	9	3	7
Extension News Releases	12	7	2	4
Newspapers	8	4	--	--
Commercial Companies	7	4	--	--
U.S.D.A.	7	4	--	--
Others	12	6	--	--
Totals	183	100	44	100

*This question was "open-ended" in nature, that is, no specific responses were suggested to the respondents; each county Extension agent could list as many sources as he wished. The agents listed an average of more than four different sources.

scientists, (2) more personal in nature, and (3) more timely in terms of when the new practice is released.

Key farmers accounted for about nine per cent of the county Extension agents' sources of information (Table 1). While the communication model indicated a general flow of information from the county Extension agent to the farmer, the findings suggest there is also a considerable flow of information in the reverse direction.

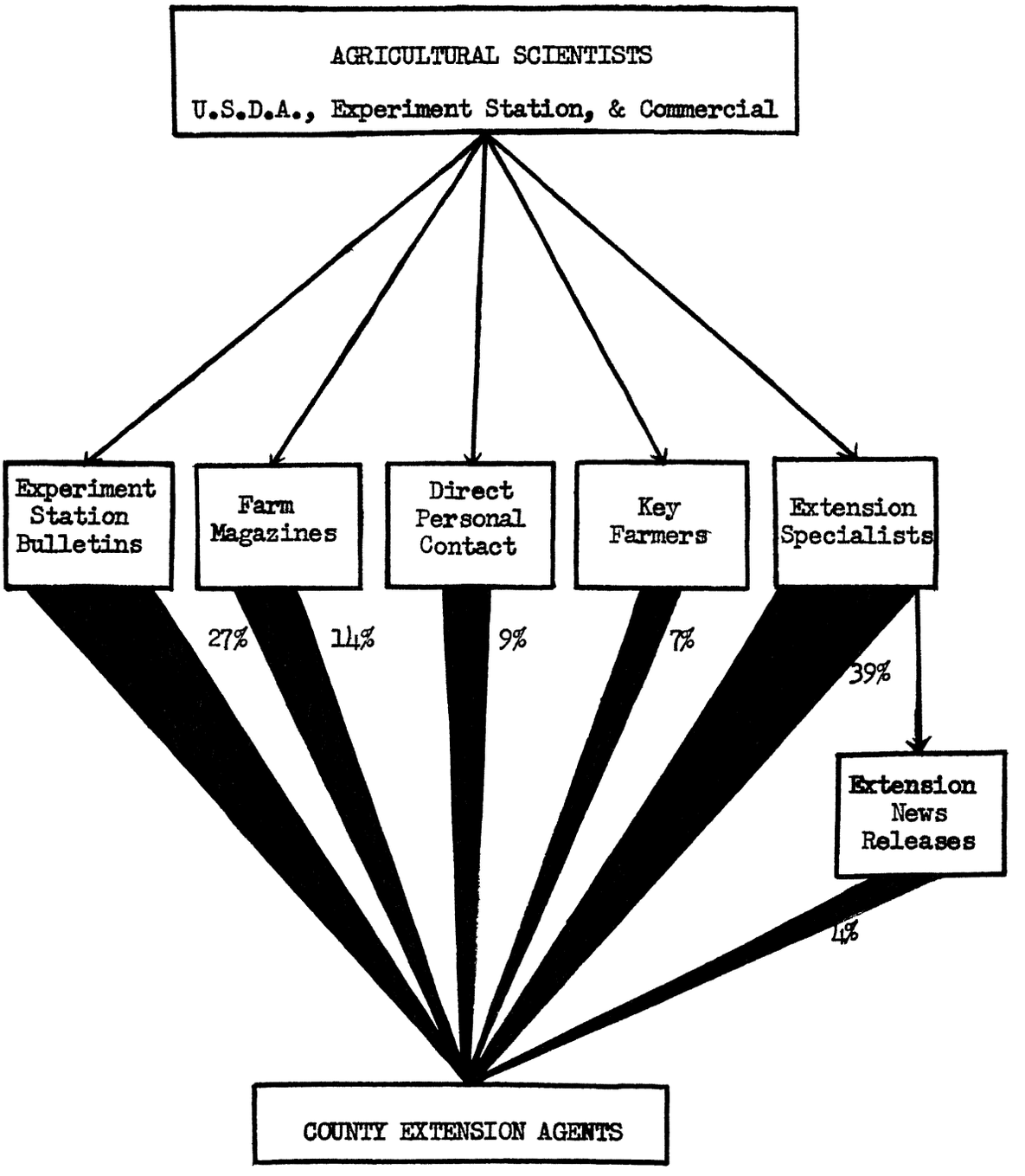

Figure 2. Most Important Single Source of Information for County Extension Agents

Several county Extension agents described these local farmers from which they secured information about new practices:

> "This farmer is a college graduate and is an outstanding farmer. He likes to try out new swine practices even before I would recommend them. He has called several new ideas to my attention in the last year."

> "Some of the farmers in my county are innovators. They specialize in some farm enterprise and can keep abreast of the new developments in that field better than I can. I'm a "generalist" in that I must learn new things in many fields."

The remainder of this section will discuss each of the several sources of information which county Extension agents named as most important.

Specialists

Agricultural Extension Specialists are considered the most important single source of information by county agents in Ohio. These specialists are located at the Ohio State University and travel over the state to diffuse new farm information in their subject-matter field. Thirty-nine per cent of all the agents interviewed gave this source.

Agents consider these specialists important sources of information for at least two reasons: (1) they are an intermediary who can get the latest "scoop" on the newest and most recent practices which are being released; and (2) they are regarded as an important "interpreter" of scientific findings released by agricultural scientists.

Experiment Station Bulletins

County Extension agents stated that Experiment Station bulletins are their second most important source of information. Thirty-five of the 44 county Extension agents mentioned bulletins as an important source and 12 stated bulletins were their most important single source.

A rather wide range of responses were recieved when the county Extension agents were asked, "How important are Agricultural Experiment Station bulletins to you as a source of information about new farm practices?"

> "Very important to dig into the full problem and see all of the data. Often need it /a bulletin/ to qualify information and relate it to the problem."

> "Very. Always like to check these before making recommendations /to farmers/."

> "Bulletins are important--very important, unless the Extension specialist sends out a digest of the material."

Other county Extension agents tended to view Experiment Station bulletins of less value as sources of farm information.

> "Bulletins are very important, but the technical research data is difficult to understand and explain."

> "Not very important. Too technical. When I want the time of day I don't want to know how a watch is made."

The responses from the 44 county Extension agents were categorized on a five-point scale from "very important" to "not important." The importance of Experiment Station bulletins as an information source for county Extension agents is shown in Table 2.

Half of the county Extension agents' responses were categorized as at least "important."[6] A variety of reasons were given by the 22

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[6] It should be pointed out that this finding is not entirely consistent with the finding reported in Table 1 that 35 of the 44 agents regarded Experiment Station bulletins as "important." The reason for the difference may be in the way the questions were asked or in the categorization of the responses.

Table 2. Importance of Experiment Station Bulletins as Information Sources for County Extension Agents

Importance	Number of Agents	Per Cent of Agents
Very Important	3	7
Quite Important	10	23
Important	9	20
Not Very Important	21	48
Not Important	1	2
Total	44	100

county Extension agents who considered bulletins as not very important. Some felt the Experiment Station bulletins were too technical for a county Extension agent to understand. Others felt bulletins were too detailed or not of a timely nature. These responses indicated that to a certain extent, county Extension agents felt a need for an intermediary to summarize and interpret research findings contained in agricultural Experiment Station bulletins. Many county Extension agents reported that they looked to the Extension specialist to fulfill this role of interpreting research results.

Farm Magazines

Farm magazines are also an important source of information for county Extension agents.. Only Extension specialists and Experiment Station bulletins were regarded by county Extension agents as more important sources.

The importance of farm magazines is indicated by the number that are read. The average Ohio county Extension agent reported reading about eight farm magazines (Table 3). Readership in this sense was

defined as including both "thorough" and "scan reading."

Table 3. Number of Farm Magazines Read by County Extension Agents

Number of Magazines Read	Number of Agents	Per Cent of Agents
Five	3	7
Six	5	11
Seven	7	16
Eight	16	36
Nine	7	16
Ten	6	14
Total	44	100

Table 4. Number of Farm Magazines Read Thoroughly by County Extension Agents

Number of Magazines Read Thoroughly	Number of Agents	Per Cent of Agents
None	11	25
One	6	14
Two	8	18
Three	10	23
Four	6	14
Five	1	2
Six	0	0
Seven	2	4
Total	44	100

While the 44 county Extension agents read an average of 7.84 farm magazines, only about two of these magazines (or 27 per cent of the total) were read thoroughly by the average agent (Table 4). One-fourth of the county Extension agents reported they read no farm magazine thoroughly.

County Extension agents scan read more farm magazines than they read thoroughly. They read an average of 2.15 magazines thoroughly and scan read an average of 5.66 magazines (Table 5). Scan reading amounts to 73 per cent of the total numbers of farm magazines read by county Extension agents. Respondents indicated that they often scanned through issues of farm magazines and marked certain articles for later and more careful reading.

County Extension agents often receive free copies of farm magazines. It is also evident that they receive a large number of publications. Perhaps it is no surprise then that the average county Extension agent only finds time to scan read many of the magazines which he recieves. The 44 county Extension agents reported that they received an average of about one farm magazine which they did not read at all.

The role played by farm magazines as a source of information is perhsaps illustrated by the comments of one county Extension agent:

> "I depend on farm papers and magazines to keep me up to date on new ideas. That's where they often come out first. Now I think maybe magazines play up the spectacular aspects of new practices. But I like to leaf through them each issue to get an idea of the new things. Often I don't find time to read the whole article."

Other comments by county Extension agents emphasized this theme. Farm magazines are helpful because they give new and timely information

Table 5. Number of Farm Magazines Scan Read by County Extension Agents

Number of Magazines Scan Read	Number of Agents	Per Cent of Agents
One	0	0
Two	4	9
Three	2	4
Four	3	7
Five	13	30
Six	7	16
Seven	6	14
Eight	8	18
Nine	0	0
Ten	1	2
Total	44	100

about new farm practices:

"Farm magazines supply a source of new practices."

"They give accurate accounts of successful practices used on farms."

"Up-to-the-minute reports on new research."

Professional Publications

In this study a distinction was made between "farm magazines" and "professional publications." Professional publications were defined as those magazines which are written for the professional agricultural worker; such as, the county Extension agent. Such magazines as Better Farming Methods, Ohio Farm and Home Research, and the U.S.D.A. Extension

Service Review are typical of these professional publications.

The county Extension agents were presented with a list of nine professional publications during the interview and were asked which one was the most helpful as a source of new farm information.[7] The responses (Table 6) indicate that Ohio Farm and Home Research is most important. This bimonthly publication features articles by research workers at the Ohio Agricultural Experiment Station.

Both the content and the locale of these professional publications seems to be related to their importance as a source of new farm information. For example, several county Extension agents remarked that they preferred an Ohio publication to one of national scope because the information was more applicable. The content of certain other professional publications is not especially concerned with new farm ideas and that is one reason their relative ranking was lower in Table 6.

County Extension agents in the sample reported reading an average of 7.54 out of the nine professional publications. Over 3 of these publications (42 per cent) were read thoroughly. Most of the remaining publications were scan read. In comparison to farm magazines, county Extension Agents tend to read professional publications more thoroughly.

There was evidence that county Extension agents use professional publications as an "index" to new farm practices as they are announced.

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[7]This list of nine professional publications was obtained from the five pretest interviews with county Extension agents. In addition to the nine publications, however, each respondent was asked to list any others that he found helpful.

For example, one county Extension agent remarked:

> "I use Farm and Home Research and the U.S.D.A. Agricultural Research as a sort of "table of contents." Almost every new practice is mentioned in these two publications. They give me a check on what is new--then I go to the farm magazines and specialists for more detail on the more interesting ones /new practices/. These two publications are unbiased--they don't have any commercial product to sell."

Table 6. Professional Publications Offering the Most Help to County Extension Agents as a Source of New Farm Information

Categories	Number of County Agents	Per Cent
Ohio Farm and Home Research	18.5	42
Better Farming Methods	9.9	22
U.S.D.A. Agricultural Research	6.0	14
County Agent and Vo Ag Teacher	2.8	7
U.S.D.A. Extension Service Review	2.8	7
Ohio Extension Service News	1.0	2
None or No Answer	3.0	7
Total	44.0	101*

*This column totals to 101 per cent because of rounding to whole numbers.

Scientific Journals

Each of the areas of agricultural research has a scientifice journal in which articles on current research are reported. Examples of scientific journals are the Journal of Dairy Science and the Journal of Farm Economics. These publications are mainly written for research workers and they are highly specialized in nature.

Most county Extension agents tend to view themselves as "generalists"

and not as specialists." They feel that they should have a general interest in all areas of subject matter affecting farm people. Scientific journals do not seem to be a very important source of information for county Extension agents.

Only seven of the 44 agents reported receiving even one scientific journal. None of these seven received more than one journal. This means that less than one out of five agents receive a scientific journal. This reflects the lack of emphasis that agents place on these journals as a source of information.

There were four different journals received by the seven agents. Two of them received Crops and Soils, two the Journal of Animal Science, two the Journal of Dairy Science and one the Journal of Farm Economics.

Personal Contact With Agricultural Scientists

One way to measure the amount of personal contact that county Extension agents have with agricultural scientists is to determine the number of direct contacts that each agent makes with the Agricultural Experiment Station each year. County Extension agents were asked, "Within the past year, have you attended any field days or made any special visits to the Experiment Station at Wooster? If so, how many?"

At the one extreme, there were two agents who reported that they had made at least 10 trips to the Agricultural Experiment Station during the past year. At the other extreme, five agents reported having made no trips to the Experiment Station. Most of the agents reported one, two, or three trips to the Experiment Station during the past year, the average number being 2.54 trips per agent.

Out-of-County Meetings

County Extension agents spend considerable time and effort in attending out-of-county meetings to secure new farm information.[8] These meetings are one source of information for them. Out-of-county meetings can be broken down into two broad categories: (1) those meetings which are out-of-county, but in-state; and (2) those meetings which are attended out of the state.

In-State Meetings

The average number of in-state meetings which county Extension agents attend per year is 3.5. There were some agents who didn't attend any meetings outside the county. There were also some 14 agents who attended five or more meetings outside the county.

The kinds of meetings which these agents attended varied widely in nature. The 44 agents in the study listed 63 different kinds of meetings they attended within a year's period. These meetings are categorized in Table 7.

Out-State Meetings

County Extension agents attend fewer meetings out of the state than in-state. About one in every two agents attended an out-of-state meeting in the year preceeding the interview. The nature of these meetings out-of-state are much like those in-state except many of them are on a national level. Some of those listed were: "National County

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[8]The present analysis only includes those meetings at which technical agriculture was discussed. Thus, many district and state Extension meetings were not included because agricultural subjects were not the main topic discussed.

Agents' Meeting", "American Beef Cattle Association", and "International Livestock Show."

Table 7. Out-of-the-County, But In-State Meetings Attended by County Extension Agents

Type of Meeting	Number of Meetings	Per Cent
1. Breeding Association Meetings (e.g. C.O.B.A.)	28	19
2. Fairs and Plowing Matches	26	17
3. Breed and Crop Association	24	16
4. Field Days at The Ohio State University and Experiment Station	17	11
5. Annual Conferences (e.g. County Agents' Annual Meeting)	17	11
6. Other Meetings	38	26
Total	150	100

INFORMATION SOURCES FOR TEN NEW PRACTICES

The Adoption Process

Many rural sociological studies have attempted to determine the thought process through which farmers pass as they adopt a new idea. A general finding of these research studies is that individuals pass through a series of "stages" or steps in this adoption process.[9] These

[9]George M. Beal, Everett M. Rogers, and Joe M. Bohlen, "Validity of the Concept of Stages in the Adoption Process", Rural Sociology 22: 166-168, 1957; and James H. Copp, Maurice L. Sill, and Emory J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process", Rural Sociology 23: 146-157, 1958.

stages have been labeled as: awareness, information, application, trial, and adoption.

At the awareness stage the individual is initially exposed to the new idea or practice, but lacks details about it. In the information stage the farmer is motivated to seek such additional information about the new practice as its availability and relative advantages. At the application stage or "mental trial", the relative advantages of the new practice over other alternatives is considered and the decision may be made to actually try out the new practice. At the trial stage the new idea is given a practical test, usually on a small scale. At the adoption stage, the decision is made either to continue or discontinue use of the practice.

In the present study, an attempt was made to apply this adoption process to county Extension agents, rather than farmers. It was expected that county Extension agents would pass through a similar adoption process. "Adoption" by a county Extension agent, however, would amount to recommending the practice to the farmers in his county.

In the interviews, county Extension agents were questioned as to their sources of information at two different stages in the adoption process for ten new farm practices. The ten practices were:

1. Stilbestrol for beef cattle.
2. Systemic cattle grub control.
3. Bulk milk tanks.
4. Phenothiazine for internal parasite control in sheep.
5. Bulk application of fertilizer (from the truck).
6. Piperazine compounds for worm control of hogs.
7. Amino triazole weed spray for Canadian thistles.

8. Spittle bug spray.

9. Clintland oats variety.

10. Hybrid chicks.

Awareness Stage

County Extension agents were asked where or from whom they first heard about each of the ten practices. The two most important sources of information at the awareness stage for the ten practices (combined) were farm magazines and Extension specialists (Table 8.)

Table 8. County Extension Agents Sources of Information at the Awareness Stage for Ten New Farm Practices

Source of Information	Number of Agents*	Per Cent of Agents
Farm Magazines	10.3	24
Extension Specialists	10.1	22
Commercial Companies (mostly publications)	4.9	11
Experiment Station	3.6	8
Bulletins	2.5	6
Local Farmers	1.0	2
No Answer**	5.4	12
Other Sources of Information	6.2	15
Total	44.0	100

*Respondents could name more than one source, which led to fractions. For example, if a respondent named "farm magazines" and "bulletins", each of these responses received a half "vote."

**Includes "can't recall" and "haven't yet heard of practice."

The general finding of past research studies is that farm magazines, bulletins, and other types of mass media communications are most important in creating awareness of a new practice on the part of farm people. Such personal sources of information as friends, neighbors, and relatives are of relatively less significance for farmers at the awareness stage.

The present findings show that county Extension agents' sources of information at the awareness stage are consistent with past findings as to farmers' information sources. Mass media types of communication (including farm magazines, commercial publications, and bulletins) were slightly more important than personal contacts (with Extension specialists, salespeople, local farmers, and Experiment Station research workers) for county Extension agents at the awareness stage. Although both county Extension agents and farmers depend mainly upon mass media communications at the awareness stage, there are differences as to the specific sources utilized.

There was, however, a great deal of variation as to sources of information at the awareness stage among the different practices. For example, sources of information for Stilbestrol, Amino Triazole, and Clintland Oats variety are compared in Table 9.

Farm magazines were the most important source for Stilbestrol at the awareness stage. Extension Specialists were most important for both Amino Triazole and Clintland oats variety. However, bulletins accounted for 21 per cent of the county Extension agents' sources for Clintland oats variety and were not named in the case of Stilbestrol.

Conviction Stage

At the application or conviction stage, an individual weighs the

Table 9. County Extension Agents' Sources of Information at the Awareness Stage for Stilbestrol, Amino Triazole, and Clintland Oats Variety.

Source of Information	Stilbestrol	Amino Triazole	Clintland Oats
Farm Magazines	47%	10%	7%
Extension Specialists	2%	52%	22%
Commercial Companies	11%	9%	7%
Experiment Station	23%	7%	17%
Bulletins	--	7%	21%
No Answer	5%	2%	5%
Other	4%	13%	21%
Totals	100%	100%	100%

merits and disadvantages of the new practice relative to existing alternatives. A general finding of previous research studies is that farmers depend most on personal sources of information at the conviction stage. These personal sources may include a farmer's neighbors, friends, and relatives as well as personal contact with Extension workers and commercial salespeople. In contrast, farm people depend mainly on farm magazines and other mass media types of communication at the awareness stage.

In order to compare county Extension agents with farmers, each respondent was asked, "How were you convinced that this practice was

all right and should be recommended to farmers in your county?" [10] The type of behavior required for a county Extension agent to recommend a practice is comparable to adoption behavior on the part of a farmer.

The sources of information utilized by county Extension agents at the conviction stage for the ten new practices are shown in Table 10. The evidence indicates that county Extension agents depend mainly upon research results at the conviction stage. These research results are obtained directly from the Experiment Station or indirectly through Extension Specialists.

In comparison with the county Extension agents' sources of information at the awareness stage (Table 8), bulletins, farm magazines, and commercial companies are much less important at the conviction stage. This is consistent with previous findings as to farmers' sources of information at the conviction stage. Personal rather than impersonal sources are relied upon by both county Extension agents and farmers, however, the specific type of personal sources of information are different.

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[10] It should be pointed out that most of the county Extension agents in the present study indicated that they did "recommend" new farm practices. One county agent, however, indicated he seldom recommended new practices but rather preferred to limit his efforts to providing information about new practices. The majority of the respondents, however, made specific recommendations and were generally able to recall the approximate year in which they were convinced a new practice should be recommended.

Table 10. County Extension Agent's Sources of Information at the Conviction Stage for Ten New Farm Practices

Source of Information	Number of Agents	Per Cent of Agents
Experiment Station Personnel and Research Results	12.6	29
Extension Specialists	7.6	18
Commercial Companies (mostly salespeople)	0.9	2
Bulletins	0.9	2
Farm Magazines	0.3	1
Experience of Local Farmers	2.4	6
Have Not Recommended	6.4	14
No Answer	7.3	16
Other Sources	5.6	12
Total	44.0	100

Time of Recommendation

Previous research studies indicate that all farmers do not adopt new practices at the same time. The present findings indicate that all county Extension agents are neither (1) aware of nor (2) convinced of a new farm practice at the same point in time.

Although the number of cases included in both Figures 3 and 4 is rather small, the awareness and "recommendation" curves over time approach the familiar "S" shape. This distribution (when smoothed by including more cases) is a cumulative normal curve (or "give"). On a frequency basis, this distribution is a bell-shaped normal curve.

These present results are consistent with past findings in the case of the adoption rate of new farm ideas by farmers, [11] and new drugs by medical doctors. [12] In both cases, adoption behavior was found to approach normality when plotted over time.

The rate of awareness and recommendation for both Stilbestrol and bulk tanks increased slowly at first, then quite rapidly, and then started to level off as almost all the county Extension agents were aware of and recommended these new practices. [13] There are probably several reasons why all county Extension agents do not recommend

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[11] Everett M. Rogers, "Categorizing the Adopters of Agricultural Practices, Rural Sociology 23: 345-354, 1958.

[12] Herbert Menzel and Elihu Katz, "Social Relations and Innovation in the Medical Profession", Public Opinion Quarterly 19: 337-352, 1955.

[13] It might be expected that some of these differences in time of awareness and time of recommendation might be due to the tenure of the county Extension agent in his present county. When the effect of this factor (tenure) was controlled, however, only small differences were observed. This may be due to the fact that most of the respondents who were aware of the practices before they began employment in their present county were previously serving as a county Extension agent, associate county Extension agent, or vocational agriculture teacher in another Ohio county, and were exposed to about the same communication stimuli.

new practices at the same point in time. For example, differences in the time of recommending bulk milk tanks may partly be explained on the basis of the local county situation. In some counties, the size of dairy herds and local dairies may encourage the adoption of bulk tanks by farmers. The number of local farmers who try out and demonstrate a new practice will have some effect on the time at which the county Extension agent recommends that practice. Some counties are located closer to the Agricultural Experiment Station or to substations. All of these factors probably tend to create differences when county Extension agents recommend new practices.

Both Figures 3 and 4 show that a considerable time period was required for county Extension agents to become convinced of a new practice after they were aware of its existence. All of the 28 county Extension agents recommending Stilbestrol waited at least a year after first learning about the practice before they would recommend it to the farmers in their county. The average agent required an "adoption period" of 2.07 years to pass through the adoption process from awareness to recommendation.

Only two of the 34 county Extension agents recommending bulk tanks waited less than a year after first learning about the practice before they would recommend it to the farmers in their county. The average agent required an adoption period of 2.38 years.

There were wide differences among county Extension agents as to the number of years required for them to become convinced of a new practice after they had learned of its existence. For example, adoption periods ranged from one to four years for Stilbestrol and from

zero to 13 for bulk tanks. One might expect individuals who learned of a new practice relatively earlier than their peers, to adopt (recommend) it at a relatively earlier date. The findings indicate only a slight relationship for either Stilbestrol or bulk tanks. Only a very slight tendency was apparent for earlier awareness dates to be associated with earlier recommendation dates of Stilbestrol (Table 11).

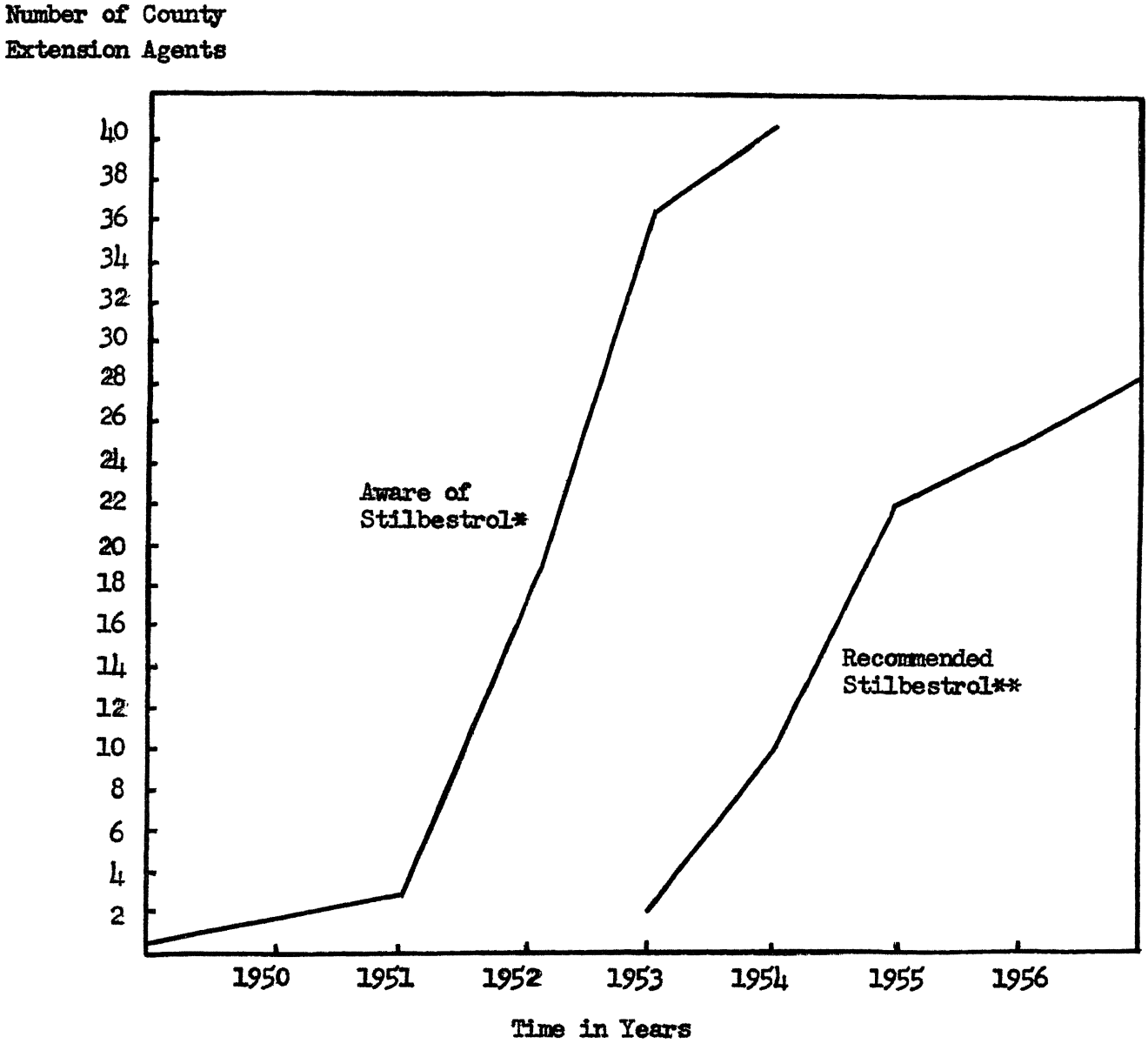
Table 11. Date County Extension Agents Recommended Stilbestrol by Date of Awareness

Date County Extension Agents Were Aware of Stilbestrol	Date County Extension Agents Recommended Stilbestrol					
	1953	1954	1955	1956	1957	Not Yet Recommended
1952	2	4	3	-	-	5
1953	-	4	6	2	2	5
1954	-	-	3	1	1	-
Total	2	8	12	3	3	10*

*Six county Extension agents either could not recall their awareness date or else were aware previous to 1952.

The number of years required for a county Extension agent to pass through the adoption process is also not associated with date of awareness of Stilbestrol (Table 12). The average length of the adoption period bears no consistent relationship to the date county Extension agents were first aware of Stilbestrol.

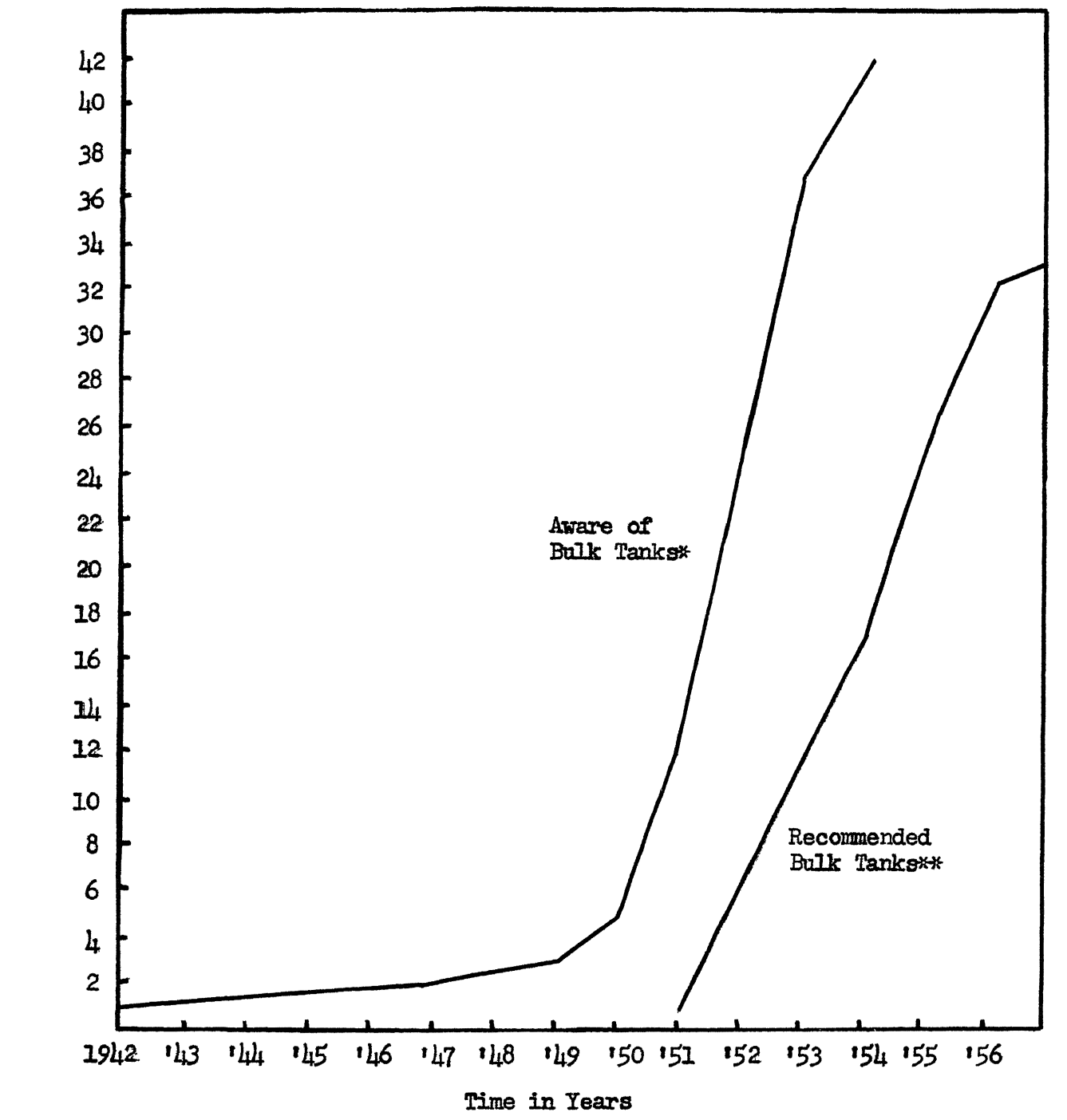
This is not a surprising finding. Individuals become aware of a new idea largely by "accident." Information cannot be sought



* Three county Extension agents could not recall their date of awareness.

** Six county Extension agents could not recall the date they recommended stilbestrol, and ten county Extension agents had not yet recommended stilbestrol.

Figure 3. Date County Extension Agents Were Aware of and Recommended Stilbestrol



* Two county Extension agents could not recall their date of awareness.

** Six county Extension agents could not recall the date they recommended bulk tanks, and five county agents had not yet recommended bulk tanks.

Figure 4. Date County Extension Agents Were Aware of and Recommended Bulk Tanks

about a new practice at the awareness stage because individuals are, obviously, not yet aware of it. The mass media (farm magazines especially) were the most important source of information for county Extension agents about Stilbestrol at the awareness stage (Table 9).

However, at the recommendation stage, personal sources of information (especially Extension specialists) about Stilbestrol were sought out by the county Extension agents. On the basis of this reasoning, one would expect the length of the adoption process to be closely associated with date of recommendation of a new practice.

Table 12. Length of the Adoption Period for County Extension Agents Recommending Stilbestrol by Date of Awareness

Date County Extension Agents Were First Aware of Stilbestrol	Number of County Extension Agents	Average Length of the Adoption Period
1952	9	2.11 years
1953	14	2.28 years
1954	5	1.80 years
Total	28*	2.07 years

*Sixteen of the county Extension agents had not yet recommended Stilbestrol to farmers in their county at the time of the interviews in October, 1957.

This was found to be true in the case of Stilbestrol (Table 13). County Extension agents who were relatively early in recommending Stilbestrol were characterized by a very short adoption period.

Agents who were relatively late in recommending Stilbestrol were

characterized by a long adoption period. For example, county Extension agents recommending Stilbestrol in 1954 had an average adoption period of 1.5 years while agents recommending this practice in 1957 had an average adoption period of 3.67 years.

Table 13. Length of the Adoption Period for County Extension Agents Recommending Stilbestrol by Date of Recommendation

Date County Extension Agents Recommended Stilbestrol	Number of County Extension Agents	Average Length of the Adoption Period
1953	2	1.00 years
1954	8	1.50 years
1955	12	2.08 years
1956	3	2.67 years
1957	3	3.67 years
Total	28*	2.07 years

*Sixteen of the county Extension agents had not yet recommended Stilbestrol to farmers in their county by October, 1957.

These findings suggest that agents are relatively early in recommending new practices not because they are aware of the new practice at a relatively early date, but rather because once they are aware they move rapidly to recommend the practice. A generally similar pattern of findings has been determined for farmers adopting new practices.

Similar evidence can also be found by an inspection of Figure 3. Almost all of the county Extension agents were aware of Stilbestrol before the first agent recommended this practice to local farmers.

A majority of the agents were aware of bulk milk tanks (Figure 4) before more than a handful had recommended this practice. These findings suggest that lack of awareness information does not "slow up" the adoption of new farm practices. Rather, it is the lack of "convincing" influences which spread out the time pattern over which the agents recommended new practices. If the desire is to "speed up" the process by which new practices are adopted, more attention should be directed to shortening the adoption period than to creating earlier awareness of new practices.

Method of Dissemination to Farmers

After a county Extension agent decides to recommend a new practice, the next step in the "two-step flow of communication" is to disseminate it to the farmers in the county.

As is shown in Table 14, the most common methods of dissemination for the ten new practices were newspaper articles, meetings, and personal contacts with farmers.

COORDINATION WITH OTHER INFORMATION AGENCIES

Within every county there are several different governmental agencies which act as sources of information for farmers. Among the employees of these agencies are the county Extension agent, the Vo-Ag teacher, the Soil Conservation Service worker and others who all try to work together to meet the informational needs of the farmer. In addition, there are farmer organizations and commercial concerns who promote new farm practices.

The county Extension agent, one of these sources of information, has a unique role to play. He is not only a direct source of informa-

Table 14. Methods of Dissemination for Ten New Practices by County Extension Agents

Methods of Dissemination	Number of Agents	Per Cent of Agents
Newspaper Articles	6.3	14
Local Extension Meetings	6.2	14
Personal Contacts With Farmers	5.1	11
Newsletter	3.2	7
Radio Farm Shows	2.1	5
Farm Tours	1.9	4
Demonstrations	1.9	4
Bulletins	1.3	3
Office Calls	0.7	2
Never Recommended Practice	7.0	16
No Answer	4.4	10
No Methods Used Yet	2.1	5
Other Methods	1.8	5
Total	44.0	100

tion for farmers, but he also acts as a source of information to many of these other agencies. The county Extension agent may be able to indirectly reach greater numbers of farmers by working through these other agencies.

County Extension agents were asked, "To what extent do you work with each of the following groups in your county?" Their answers can be found in Table 15.

The degree to which county Extension agents coordinate their communication activities with other agencies varies from county to county and from agency to agency. In general, greatest coordination is achieved with farm service associations (such as the DHIA) and with the Soil Conservation Service. Least coordination is achieved with the Farmers' Union. This is because there are relatively few Farmers' Union locals in Ohio.

SUGGESTED IMPROVEMENTS IN COMMUNICATION

Agriculture in America is changing at a very rapid pace; thus, the county Extension agent is being forced to make changes in his communication methods if he is to remain effective. The changes listed in this section were suggested by the 44 county Extension agents and are not necessarily those of the authors.

Bulletins

Agricultural Experiment Station bulletins are an important source of information about new farm practices. The county Extension agents were asked: "What suggestion would you make to improve bulletin effectiveness?" The responses to this question were categorized and are shown in Figure 5.

The central theme which ran throughout the majority of the county Extension agents' comments was a desire for an increase in readability. County Extension agents do not feel qualified to directly interpret research results. They feel a need for an interpreter in this role, such as the Extension Specialist.

Adequacy of Information

Improvements were also suggested as to the adequacy and timeliness

Table 15. Coordination of County Extension Agents With Other Information Agencies

Names of Information Agencies	0 None	1 Very Little	2 Some	3 Very Much	Average Coordination
Service Associations (e.g., DHIA)	0	1	2	41	2.91
Soil Conservation Service (SCS)	1	0	7	36	2.77
Breed Associations	2	2	21	19	2.30
Farm Bureau	3	1	20	20	2.30
Agricultural Stabilization and Conservation (ASC)	0	2	27	15	2.29
VoAg Teachers	4	1	20	19	2.23
Farmer Organizations in General	0	3	28	13	2.23
Ohio Department of Agriculture	0	9	19	16	2.16
Veterinarians	1	5	26	12	2.11
Grange	3	5	22	14	2.07
Civic or Community Clubs	0	12	17	15	2.07
Commercial Concerns	0	5	31	8	2.07
Farmers Home Administration (FHA)	2	12	25	5	1.75
County School Superintendent	3	12	24	55	1.70
County Health Department	4	17	18	5	1.50
Farmers' Union	38	5	1	0	0.16

of the agents' sources of information. Our respondents were asked, "Do you feel that a county agent in Ohio gets adequate information about farm practices when the practices first come out?"

Fifty-six per cent felt that they did not get adequate information

nor that they got it on time. One agent said, "It takes too long before we receive it, commercial concerns have it out first many times, and farmers ask us before we know about it." Another agent reported, "A lot of times the information goes to magazines and newspapers before agents receive it."

County Extension agents have a feeling that they are being "short-circuited." That is, commercial concerns, farm magazine editors, etc., find out about new farm pratices before the county Extension agents do.

Several improvements were suggested:

> "Continuous progress reports on research underway--a few paragraphs to agents each month would do the job."
>
> "Send out preliminary reports on facts known and work under study."
>
> "Specialists should have a newsletter that comes out periodically to include all new ideas in their fields."
>
> "More help from specialists on keeping agents up to date."
>
> "Specialists put out a monthly newsletter on new practices that have developed, whether information is complete or not."

These quotes were typical of the suggestions given by county Extension agents. There seemed to be one central theme. Agents feel that specialists ought to give them more time and keep them up to date. To do this, agents suggested that these specialists send out monthly newsletters, preliminary reports, etc. County Extension agents are often able to maintain their social position in their county because they are one of the best sources of information about new ideas. Agents feel that sometimes they are not in the direct line of communication from agricultural scientists to farm people.

Out-of-County Meetings

When asked for their opinion about the amount of time an agent is required to spend out of the county, twenty-one of the 44 agents interviewed in this study reported that they had to spend too much time out of their county. The other 23 respondents said the time spent out of the county was "about right."

Agents were also asked to give reasons for their opinion of out-of-county meetings. Some of their reasons for feeling that agents have to spend "too much" time out-of-county were as follows:

> "Too many conferences that come during the part of the year when the Extension load is the heaviest."
>
> "Too often it is the same old hash. We hear the same thing over and over again at the conferences."
>
> "A county agent should be responsible to people in the county first. They are the taxpayers."
>
> "There seems to be too much time needed in the county to make so many trips out.
>
> "I believe some sessions could be combined into a one full day session instead of two or three half day sessions."

These comments indicate why agents said that they have to spend "too much" time out of their county. It must be remembered, however, that more than half of the agents felt the time spent at meetings was justified. These agents saw most of these meetings as one type of contact with agricultural scientists. For example, the following remarks illustrate this point.

> "If one is to keep up-to-date on these new research findings and so on, one has to attend these meetings outside of the county."
>
> "I feel that I have been able to render better educational service to my farmers by spending the time I do outside the county at meetings."

College Training of County Extension Agents

County Extension agents were queried as to the adequacy of their undergraduate training for Extension work. About one-third (32%) felt their undergraduate training was "adequate" for their job, meaning that they didn't know of any major lack or need for improvement. The other two-thirds indicated a wide variety of ways in which they felt that their undergraduate training was "inadequate." These findings are similar to those found by Wilkening in a Wisconsin study. [14]

When asked, "What would you do differently in terms of college preparation?", more indicated a need for training in Extension methods than in any other area (Table 16). There were 18 per cent who felt that they needed more courses in Extension methods. Next in frequency of mention were courses in sociology, and courses in technical subject matter, not specified. Communications courses were indicated as the next greatest need, followed by courses in journalism and psychology. Most of these courses which were mentioned pertain to methods and procedures of understanding people, and how they are influenced. In fact, "non-agricultural" type courses were mentioned twice as often as "agricultural" courses. This finding has implications for those who are training future Extension workers.

The comments of several respondents indicated this need for more adequate training in <u>how</u> to communicate with people rather than in <u>what</u> to communicate.

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[14] Eugene A. Wilkening, <u>The County Extension Agent in Wisconsin</u>, Madison, Wisconsin Agricultural Experiment Station Research Bulletin 203, 1957.

Table 16. Suggested Improvements in Undergraduate Training of County Extension Agents.

Type of Course Needed	Number of Agents	Per Cent of Agents
Non-Agricultural Courses	42	95
Extension Methods	8	18
Sociology	7	16
Communications	6	14
Journalism	5	11
Psychology	5	11
Agricultural Education	3	7
Speech	2	5
Broad General Course	2	5
Public Relations	2	5
Social Studies	1	2
More Research	1	2
English	1	2
Agricultural Subject Matter Courses	22	50
Technical Subject Matter (Not Specified)	7	16
Agronomy and Soils	6	14
Agricultural Economics	3	7
Entomology	2	5
Farm Management	1	2
Dairy Science	1	2
Chemistry	1	2
Botany	1	2

"Need group dynamics, how to work with groups. Also a course on methods in Extension."

"Take more courses in Extension (not offered when I was in school), communications, sociology."

"Fewer courses in agriculture subject matter and more practical courses in Extension methods and communications."

"More preparation in journalism, psychology, and sociology."

"More training in sociology, human relations, and public relations. That's what I am lacking."

Changes in Extension Clientele

In the past, the Extension Service has worked mainly with farm people. However, due to the many social changes occuring in agriculture, many people think this clientele will change. County Extension agents were asked, "In the next ten years, do you think the clientele in Extension work should change? If yes, in what way?"

Sixty-five per cent of the county Extension agents answered the first part of this question, "yes." They thought there definitely will be some changes in the clientele with which Extension will work. In answering the next part of the question, "In what way do you think the clientele will change?", there were two main suggestions: (1) the Extension Service will give more help to urban and non-farm people; and (2) the Extension Service will help more part-time farmers. Some of the following comments from the research interviews will illustrate these two main suggestions.

"Extension will work more with urban and part-time farmers."

"As the demand arises, working more with urban people."

"More part-time farmers--it will take more agents to work with families through personal contact."

"Include more urban people in the program and also rural non-farm."

"Working with farm people should remain in first place, but we should move slowly into working with non-farm people."

"More emphasis will be placed on lawn and garden problems, part-time farming, zoning, and community planning."